1655

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

March 5, 2003

Hon. Commissioner of Patents and Trademarks
Washington DC 20231

Applicant: Steven A. Benner
Title: A Method for Selecting Functional Deoxyribonucleotide Derivatives
Serial number: 09/415,966 Art Unit 1655
Filing date: October 12, 1999
Examiner. Stephanie W. Zitomer

Certificate of Mailing under 37 C.F.R. 1.8(a)

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Steven A. Benner (Applicant)

This is a verified statement that the Applicant is a "small entity" as defined by 37 CFR 1.27. The Applicant is a holder of Deposit Account Number 02-2055 in the Applicant' name,and authorizes the Commissioner to debit any charges or credit any overpayment to this account as appropriate.

Dear Sir:

This communication is responsive to an Office Action mailed November 6, 2002, Paper 15 in the case.

This Action, which was written in response to the Applicant's papers filed on 6/28/02 and 8/05/02 (note, the date in the Action appears to be an error) transmitted the following decisions:

1. To allow Claims 3, 4, 7, and 8.
2. To remove Claim 31 from consideration under a restriction requirement; this should have been done when the restriction requirement was originally placed, but Claim 31 was inadvertently left out of the list of Claims removed from consideration via the exclusion.
3. To maintain the rejection of Claim 9.

In a telephonic conversation, the Applicant agreed to permit this case to move to issuance based on Claims 3, 4, 7, and 8. The purpose of this response is to Amend the application to allow this to happen by:

1. Renumbering Claims 3, 4, 7, and 8 so that they become Claims 1, 2, 3, and 4 respectively.
2. To cancel from this application all Claims that were not examined in this examination based on the restriction requirement, reserving these to be examined in a resubmitted continuation-in-part.
3. To cancel Claim 9, in anticipation of the Applicant providing more enablement in a CIP.

Respectfully submitted,

Steven A. Benner (Applicant)

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March 5, 2003

Re:
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AMENDMENTS TO THE CLAIMS

Please cancel Claim 9.

Please renumber Claim 3 so that it becomes Claim 1.

Please renumber Claim 4 so that it becomes Claim 2.

Please renumber Claim 7 so that it becomes Claim 3.

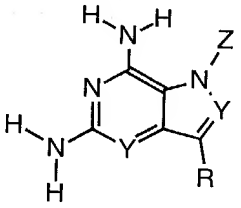
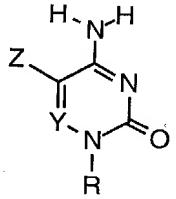
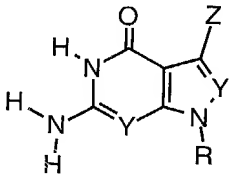
Please renumber Claim 8 so that it becomes Claim 4.

Please cancel Claim 31.

As a consequence of these actions, the final claims should read:

1. An improvement in a method for creating a ligand for a target compound, said method comprising:
a) synthesizing a mixture of oligonucleotides from nucleotide building blocks each of the oligonucleotides having a region of randomized sequence,
b) contacting said mixture with the target, wherein oligonucleotides having an increased affinity to the target relative to others in the mixture may be partitioned from the remainder of the mixture,
c) partitioning the oligonucleotides with increased affinity from the other oligonucleotides in the mixture,
d) amplifying the oligonucleotides having increased affinity *in vitro* to yield a mixture of oligonucleotides enriched in those with increased affinity for said target,
wherein the improvement comprises including among said nucleotide building blocks those carrying nucleobases selected from the group consisting of

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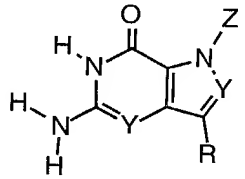
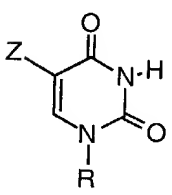
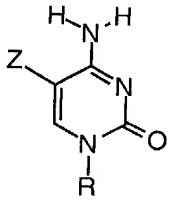


wherein -R designates the point of attachment to the ribose or 2'-deoxyribose ring, B is selected from the group consisting of -H or -NH_2, X is either a nitrogen atom or a carbon atom

bearing a substituent Z, Z is an unfunctionalized lower alkyl, alkynyl, or alkyl-alkynyl chain, or a lower alkyl, alkynyl , or alkyl-alkynyl chain bearing an amino, carboxyl, hydroxy, thiol, aryl, indole, or imidazoyl group, Y is either N or CH, and the ring contains no more than three nitrogens consecutively bonded.

2. The improvement of Claim 3 wherein said nucleobase is selected from the group consisting of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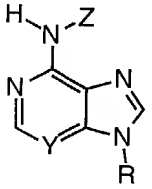
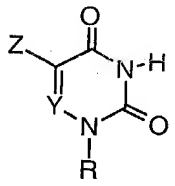
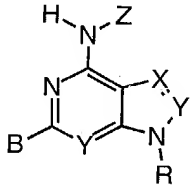
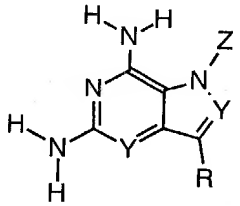
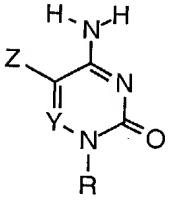
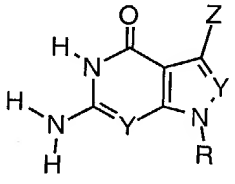


wherein -R designates the point of attachment to the ribose or 2'-deoxyribose ring, and wherein Z is selected from the group consisting of -C=C-CH_2-NH_2, -C=C-CH_2-SH, -$CH_2CH_2CH_2$-NH_2, -$CH_2CH_2CH_2$-SH, -CH_2-NH_2, -CH_2-SH-, CH_2CH_2-NH_2, -CH_2CH_2-SH, -$CH_2CH_2CH_2$-imidazole, -CH_2CH_2-imidazole, lower alkyl, -CH_2-imidazole, and -$CH_2CH_2CH_2CH_2CH_2CH_2$-NH_2.

Claim 3. An improvement in a method for creating a catalyst for a preselected reaction, said method comprising:
a) synthesizing a mixture of oligonucleotides from nucleotide building blocks each having a region of randomized sequence
b) incubating said mixture under conditions where oligonucleotides that catalyze said reaction undergo as a result of their catalytic activity a chemical transformation that makes them preferentially separable from other oligonucleotides in the mixture having less catalytic activity,
c) separating the oligonucleotides with increased catalytic activity from the other oligonucleotides in the mixture
d) copying the oligonucleotides having increased catalytic activity *in vitro* to yield a mixture of oligonucleotides enriched in those with increased catalytic activity,
wherein the improvement comprises including among said nucleotide building blocks those carrying nucleobases selected from the group consisting of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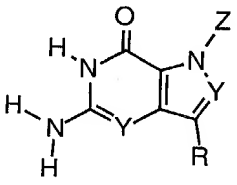
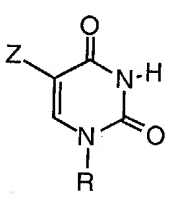
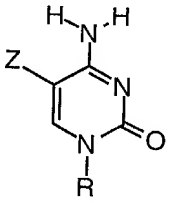


wherein -R designates the point of attachment to the ribose or 2'-deoxyribose ring, B is selected from the group consisting of -H or -NH_2, X is either a nitrogen atom or a carbon atom bearing a substituent Z, Z is an unfunctionalized lower alkyl, alkynyl, or alkyl-alkynyl chain, or a lower alkyl, alkynyl , or alkyl-alkynyl chain bearing an amino, carboxyl, hydroxy, thiol,

aryl, indole, or imidazoyl group, Y is either N or CH, and the ring contains no more than three nitrogens consecutively bonded.

Claim 4. The improvement of Claim 7, wherein said nucleobase is selected from the group consisting of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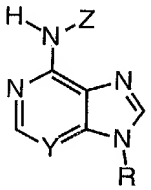

wherein -R designates the point of attachment to the ribose or 2'-deoxyribose ring, and wherein Z is selected from the group consisting of -C=C-CH_2-NH_2, -C=C-CH_2-SH, -$CH_2CH_2CH_2$-NH_2, -$CH_2CH_2CH_2$-SH, -CH_2-NH_2, -CH_2-SH-, CH_2CH_2-NH_2, -CH_2CH_2-SH, -$CH_2CH_2CH_2$-imidazole, -CH_2CH_2-imidazole, lower alkyl, -CH_2-imidazole, and -$CH_2CH_2CH_2CH_2CH_2CH_2$-NH_2.

Respectfully submitted,

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